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Appl. No. 10/605,502  
Reply to Office action of September 17, 2007

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**Amendments to the Claims:**

Claims 1, 7, 16, 17 and 26 have been amended. No new matter is added.

- 5 The listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (currently amended) A keyboard comprising:
- 10 a key module comprising at least one key cell with an output end being selectively connected to one of a first voltage and a second voltage;
- a detect circuit electrically connected to the output end of the key cell for generating a control signal whenever the output end of the key cell becomes connected to the other of the second voltage and the first voltage;
- 15 a parallel-to-serial register electrically connected to the output end of the key module; and
- a processor electrically connected to the parallel-to-serial register and the detect circuit for controlling the parallel-to-serial register according to the control signal without polling for a status of the key cells during a
- 20 time period between any key cell being connected to the first voltage and then connected to the second voltage.
2. (previously presented) The keyboard of claim 1, wherein the detect circuit comprises at least one capacitor corresponding to and electrically connected to
- 25 the at least one key cell within the key module.
3. (previously presented) The keyboard of claim 2, wherein the detect circuit further comprises an amplifying circuit electrically connected to the capacitor for amplifying the voltage in the capacitor.

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4. (previously presented) The keyboard of claim 3, wherein the detect circuit further comprises a set of comparators electrically connected to the amplifying circuit, for comparing whether the voltage output from an output end of the amplifying circuit is in a predetermined range and generating the control signal accordingly.
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5. (original) The keyboard of claim 4, wherein the set of comparators comprises a positive comparator for generating the control signal when the voltage output from the output end of the amplifying circuit exceeds a positive reference voltage, and a negative comparator for generating the control signal when the voltage
- 10 output from the output end of the amplifying circuit is lower than a negative reference voltage.
6. (original) The keyboard of claim 4, wherein the detect circuit further comprises an OR gate with its input ends electrically connected to the output ends of the set
- 15 of comparators, and its output end for outputting the control signal.
7. (currently amended) A keyboard comprising:
- a key module comprising at least one key cell with an output end;
- a detect circuit electrically connected to the output end of the key cell for
- 20 detecting a transient voltage at the moment when the key cell is pressed and ~~or~~ released and generating a corresponding control signal;
- a parallel-to-serial register electrically connected to the output end of the key module; and
- a processor electrically connected to the parallel-to-serial register and the
- 25 detect circuit for controlling the parallel-to-serial register only upon reception of the control signal without polling for a status of the key cells during a time period between any key cell being pressed and then released.
- 30 8. (previously presented) The keyboard of claim 7, wherein the detect circuit

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comprises at least one capacitor corresponding to and electrically connected to the at least one key cell within the key module for detecting the transient voltage.

- 5 9. (previously presented) The keyboard of claim 8, wherein the detect circuit further comprises a comparator electrically connected to the capacitor for generating the control signal by comparing the transient voltage with a reference voltage.
- 10 10. (previously presented) The keyboard of claim 9, wherein the detect circuit further comprises an amplifier electrically connecting the capacitor and the comparator for amplifying the transient voltage.
- 15 11. (previously presented) The keyboard of claim 8, wherein the detect circuit further comprises a set of comparators electrically connected to the capacitor for generating the control signal by comparing the transient voltage with reference voltages.
- 20 12. (previously presented) The keyboard of claim 11, wherein the set of comparators comprises a positive comparator and a negative comparator for comparing the transient voltage with a positive reference voltage and a negative reference voltage, respectively, to generate the control signal.
- 25 13. (previously presented) The keyboard of claim 12, wherein the detect circuit further comprises an amplifier electrically connecting the capacitor and the set of comparators for amplifying the transient voltage.
- 30 14. (previously presented) The keyboard of claim 12, wherein the detect circuit further comprises an OR gate electrically connected to the set of comparator for outputting the control signal.
15. (previously presented) The keyboard of claim 14, wherein the detect circuit

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further comprises an amplifier electrically connecting the capacitor and the set of comparators for amplifying the transient voltage.

16. (currently amended) A keyboard comprising:

- 5 a key module comprising at least one key cell with an output end being selectively connected to one of a first voltage and a second voltage;  
a detect circuit electrically connected to the output end of the key cell for generating a control signal whenever the output end of the key cell becomes connected to the other of the second voltage and the first  
10 voltage;  
a parallel-to-serial register electrically connected to the output end of the key module for inputting input data from the output end when the key cell is pressed or released; and  
a processor electrically connected to the parallel-to-serial register and the  
15 detect circuit for controlling the parallel-to-serial register and reading the input data therein according to reception of the control signal, without polling for a status of the key cells during a time period between any key cell being connected to the first voltage and then connected to the second voltage.

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17. (currently amended) A keyboard comprising:

- a key module comprising at least one key cell with an output end;  
a detect circuit electrically connected to the output end of the key cell for  
detecting a transient voltage at the moment when the key cell is pressed  
25 and ~~or~~ released and generating a control signal;  
a parallel-to-serial register electrically connected to the output end of the key module for inputting input data from the output end when the key cell is pressed and ~~or~~ released; and  
a processor electrically connected to the parallel-to-serial register and the  
30 detect circuit for controlling the parallel-to-serial register and reading

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the input data therein only upon reception of the control signal without polling for a status of the key cells during a time period between any key cell being pressed and then released.

- 5 18. (previously presented) The keyboard of claim 1, wherein the key module further includes a plurality of key cells each having an output end connected to one of the first voltage and the second voltage; and the parallel-to-serial register is electrically connected to the output end of each of the key cells in the key module for reading a parallel input being the voltages at the output end of all the key cells and converting the parallel input into a serial representation for output to the processor.
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19. (previously presented) The keyboard of claim 7, wherein the key module further includes a plurality of key cells each having an output end; and the parallel-to-serial register is electrically connected to the output end of each of the key cells in the key module for reading a parallel input being voltages at the output end of all the key cells and converting the parallel input into a serial representation for output to the processor.
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20. (previously presented) The keyboard of claim 16, wherein the key module further includes a plurality of key cells each having an output end connected to one of the first voltage and the second voltage; and the parallel-to-serial register is electrically connected to the output end of each of the key cells in the key module for inputting parallel input data being the voltages at the output end of all the key cells and converting the parallel input data into a serial representation for output to the processor.
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21. (previously presented) The keyboard of claim 17, wherein the key module further includes a plurality of key cells each having an output end; and the parallel-to-serial register is electrically connected to the output end of each of the key cells in the key module for inputting parallel input data being voltages at the output end of all the
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key cells and converting the parallel input data into a serial representation for output to the processor.

22. (previously presented) The keyboard of claim 1, wherein the detect circuit is further  
5 for asserting the control signal only while detecting a transient voltage being greater than a reference voltage, the transient voltage corresponding to a change in voltage at the output end of the key cell and being a voltage spike that occurs at the moment the output end of the key cell becomes connected to the other of the second and the first voltage.
- 10 23. (previously presented) The keyboard of claim 7, wherein the detect circuit is further for asserting the control signal only while detecting the transient voltage being greater than a reference voltage, the transient voltage being a voltage spike that occurs at the moment the key cell is pressed and at the moment the key cell is  
15 released.
24. (previously presented) The keyboard of claim 16, wherein the detect circuit is further for asserting the control signal only while detecting a transient voltage being greater than a reference voltage, the transient voltage corresponding to a change in voltage at  
20 the output end of the key cell and being a voltage spike that occurs at the moment the key cell is pressed and at the moment the key cell is released.
25. (previously presented) The keyboard of claim 17, wherein the detect circuit is further for asserting the control signal only while detecting the transient voltage being  
25 greater than a reference voltage, the transient voltage being a voltage spike that occurs at the moment the key cell is pressed and at the moment the key cell is released.
26. (currently amended) A keyboard comprising:  
30 a plurality of key cells each having an output end connecting to either a first



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voltage or a second voltage;  
a plurality of capacitors including one capacitor with a first end being coupled  
to the output end of each of the key cells;  
an amplifier being coupled to a second end of each of the capacitors;  
5 a first comparator having a positive input terminal coupled to an output end of  
the amplifier and having a negative input terminal coupled to a positive  
reference voltage;  
a second comparator having a negative input terminal coupled to the output end  
of the amplifier and having a positive input terminal coupled to a negative  
10 reference voltage;  
a logical OR gate having input ends coupled to output ends of the first and  
second comparators and having an output end being a control signal for  
being coupled to a processor to indicate that one of the key cells has been  
pressed ~~or~~ and to indicate that one of the key cells has been released; and  
15 a parallel-to-serial register having parallel input lines coupled to the output end  
of each of the key cells and having a serial output line for being coupled to  
the processor, without the processor polling for a status of the key cells  
during a time period between any key cell being pressed and then  
released.

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